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METHOD OF PACKING PACKETS OF CIGARETTES, AND SHEET OF  
PACKING MATERIAL FOR IMPLEMENTING SUCH A METHOD

TECHNICAL FIELD

5 The present invention relates to a method of packing packets of cigarettes.

More specifically, the present invention relates to a method of packing an orderly group of packets of cigarettes in a sheet of packing material to form a  
10 carton of cigarettes, to which the following description refers purely by way of example.

BACKGROUND ART

Cartons of cigarettes normally comprise ten packets of cigarettes arranged in an orderly parallelepiped-shaped group, which is enclosed in a sheet of paper or in  
15 a cardboard blank, and is then wrapped in a sheet of transparent heat-seal plastic material, normally polypropylene.

Each packet of cigarettes is printed on the outer  
20 surface with the trademark and brand name of the cigarettes, maker's details, and all compulsory information required by law, and which, in particular, comprises the content of the cigarettes and a government health warning.

25 Since legal requirements vary from one country to another, the information printed on the packet must be adapted accordingly.

And the same also applies to cartons, so that the carton packing material (sheet of paper or cardboard

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blank) must be adapted to each individual country.

US4784261 discloses a cigarette package having a desired number of individual packets which are wrapped by a clear cellophane wrapper to provide a single package; each of the individual packets contains a predetermined quantity of cigarettes. An advertising card is provided between the individual packets which in turn forms a part of the completed package upon wrapping of the package itself.

10      DISCLOSURE OF INVENTION

It is an object of the present invention to provide a method of packing packets of cigarettes, designed to reduce the cost of conforming with the legal requirements of individual countries.

15      According to the present invention, there is provided a method of packing packets of cigarettes as recited by Claim 1.

The present invention also relates to a sheet of packing material for implementing the packing method as claimed in Claim 1.

20      According to the present invention, there is provided a sheet of packing material as recited by Claim 17.

BRIEF DESCRIPTION OF THE DRAWINGS

25      A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a view in perspective, with parts removed for clarity, of an orderly group of packets of

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cigarettes;

Figures 2 to 4 show views in perspective of the orderly group in Figure 1 wrapped partly in a sheet of packing material;

5 Figure 5 shows a view in perspective of the orderly group in Figure 1 fully wrapped in the sheet of packing material;

Figure 6 shows a side view of the orderly group in Figure 5 with the sheet of packing material heat sealed;

10 Figure 7 shows a spread-out plan view of a sheet of packing material in accordance with the present invention;

Figure 8 shows a larger-scale plan view, with parts removed for clarity, of a detail of the sheet of packing material in Figure 7;

Figures 9, 10, 11 and 12 show larger-scale plan views, with parts removed for clarity, of variations of the Figure 8 detail.

#### BEST MODE FOR CARRYING OUT THE INVENTION

20 Number 1 in Figure 1 indicates as a whole an orderly group of ten packets 2 of cigarettes. Each packet 2 of cigarettes comprises a front face 3, a rear face 4, two lateral faces 5, a top face 6, and a bottom face 7. Packets 2 in group 1 are arranged in two superimposed layers, each comprising five equioriented packets 2 arranged side by side along respective lateral faces 5. The layers are superimposed so that the front faces 3 in the bottom layer contact the rear faces 4 in the top

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layer, and group 1 is therefore in the form of a parallelepiped having two main faces 8 defined respectively by front faces 3 and rear faces 4 of five adjacent packets 2; two lateral faces 9 defined  
5 respectively by top faces 6 and bottom faces 7 of the ten packets 2 defining group 1; and two end faces 10, each defined by the lateral faces 5 of the two end packets 2.

With reference to Figure 7, number 11 indicates a rectangular sheet of packing material made of transparent  
10 heat-seal plastic material, in particular polypropylene. Sheet 11 is sized to fully enclose orderly group 1 of packets 2 of cigarettes, extends along an axis A, and comprises a central panel 12 and two lateral panels 13.

Lateral panels 13 are separated from central panel  
15 12 by two ideal fold lines 14 parallel to axis A. Sheet 11 of packing material also comprises four ideal fold lines 15 perpendicular to axis A and extending solely along central panel 12. The ideal extension of ideal fold lines 15 along lateral panels 13 is defined by slits 16,  
20 each of which has one end along the edge of sheet 11 and one end along ideal fold line 14, and is defined by a cut in sheet 11 of packing material.

With reference to Figure 8, at the end of each slit along relative fold line 14, sheet 11 of packing material  
25 has a hardened portion 17, formed in central panel 12 by locally heating sheet 11 of packing material, to prevent slit 16 from initiating tearing of sheet 11.

With reference to Figure 7, slits 16 divide each

lateral panel 13 into portions 18a, 18b, 18c, 18d and 18e, which, in use, are folded onto an end face 10 of group 1.

Each portion 18d has a non-transparent portion 19  
5 with graphics 20, in particular a bar code and, possibly, a reference number.

With reference to Figure 2, sheet 11 of packing material is folded about group 1 of packets 2 of cigarettes to form a tubular wrapping. That is, central  
10 panel 12 is folded about faces 8 and 9, so that each ideal fold line 15 extends along a respective edge of adjacent faces 8 and 9, and the opposite ends of sheet 11 perpendicular to axis A are superimposed. At the same time, ideal fold lines 14 extend along the edges formed  
15 by end faces 10 with faces 8 and 9, so that lateral panels 13 of sheet 11 of packing material form two tubular portions 21 projecting from opposite ends of group 1. Each tubular portion 21 comprises two parallel, facing flaps 18b and 18d, and two parallel, facing flaps  
20 18c and 18f, wherein flap 18f is defined by overlapping portions 18a and 18e, while flaps 18b, 18c and 18d correspond to the portions indicated by the same reference numbers.

At the next steps in the packing of group 1, flaps  
25 18c and 18f are folded squarely one on top of the other onto face 10 (Figure 3), flap 18b is folded squarely onto flaps 18c and 18f (Figure 4), and flap 18d is folded onto flap 18b (Figure 5). In other words, flaps 18b and 18d

are the same size as end face 10 of group 1, so that, once folding is completed, each end face 10 is covered completely by a respective flap 18d, and the superimposed parts of sheet 11 are then sealed.

5 With reference to Figure 6, end face 10 is covered by superimposed flaps 18b, 18c, 18d and 18f, and flap 18d, which is the last to be folded down, defines the whole of the outside of end face 10. Sealing is effected by locally melting sheet 11 of packing material around  
10 flap 18d, so as to form, around flap 18d, bead seals 22, 23, 24 and 25. Bead seals 22, 23, 24 and 25 extend around, so as not to interfere with, graphics 20, are so arranged as to form an endless path 26 surrounding graphics 20, overlap at opposite ends, and are located  
15 close to respective edges defined by face 10 with faces 8 and 9.

With reference to the Figure 9 variation, as opposed to a hardened portion 17 for each slit 16, sheet 11 has an adhesive label 27 located along central panel 12,  
20 close to the end of slit 16 along ideal fold line 14, to prevent sheet 11 from tearing.

In the Figure 10 variation, slit 16 has a hooked end 28 along fold line 14.

In the Figure 11 variation, the end of slit 16 is  
25 defined by a circular opening 29 along ideal fold line 14. That is, sheet 11 is perforated, by blanking or melting, at the end of slit 16 along ideal fold line 14. Melting comprises forming and hardening the edge of

opening 29 by approaching the portion of sheet 11 for perforating with the end of a heated rod, and provides for more effective tear resistance.

In the Figure 12 variation, slit 16 is defined by a slot 30 having two opposite edges 31 connected by a semicircle 32 at the end along fold line 14. Slot 30 may be formed by blanking or melting.

In another variation not shown, only one lateral panel 13 has slits 16, the other lateral panel 13 being whole, and the relative tubular portion being closed by forming pleats.

In another variation not shown, only portion 18d with graphics 20 is detached by slits 16 from the rest of lateral panel 13.

Regardless of the form of, and the means employed to produce, slits 16, each sheet 11 of packing material is formed from a web of polypropylene (not shown) on a packing machine (not shown).

Sheet 11 of packing material is first detached from the web, and slits 16 then formed as shown in any one of Figures 8 to 12.

In one variation, slits 16 are formed before sheet 11 of packing material is detached from the web.

The variations of slit 16 shown in Figures 8 to 12 can all be obtained by cutting, blanking, or combined cutting and blanking; and opening 29 and slot 30 can be obtained indifferently by blanking or melting.

All the above operations are performed on the

packing machine (not shown) from which the web (not shown) is unwound.

Combined with the method described, sheet 11 of packing material has various advantages. In particular, it provides for packing group 1 of packets 2 of cigarettes into a carton with a single, as opposed to a double, wrapping, and allows visibility of the content of the carton, and the compulsory information, brand name and trademark on packets 2. Moreover, since each carton has distinctive markings, such as a bar code indicating the price of the carton as a whole, the end faces of the carton can be used for this purpose, by the sheet of packing material at the end faces having no pleats or seals affecting legibility of the bar code.